

IN THE CLAIMS:

The following is a complete listing of claims in this application.

1. (currently amended) A method for data transmission over an optical network, the method comprising:

collecting, in at least one service collection unit, services data in their original protocols from a plurality of different types of services to be transmitted, each said at least one service collection unit including an optical transceiver;

said plurality of different types of services comprising at least TDM, ATM, Fibre Channel, Ethernet, PDH and Frame-Relay;

processing ~~the~~ services data of at least two services from said plurality in their original protocols into ~~packets~~ a packet;

converting the packets into optical signals on an optical fiber for transmission into a metro network; and

sorting the services data from a plurality of said converted packets in at least one aggregator module, said at least one aggregator module having an aggregator optical transceiver, coupled for optical communication to the at least one service collection unit.

2. (currently amended) The method according to claim 1, further comprising:

receiving said aggregated services data, from at least one network, in one said at least one aggregator module;

sorting or de-multiplexing said aggregated services data according to end destination;

processing the sorted or de-multiplexed services data into packets according to end destination;

loading the packets onto an optical fiber for

transmission to a more local network;

unloading the packets from the optical fiber in one said at least one service collection unit;

switching the packets to local service ports in said one said at least one service collection unit;

de-packing the packets to different services data; and

sending data of each service to ~~an appropriate media~~
associated with said service.

3. (original) The method according to claim 2, further comprising the step of: inserting the processed packets into transmission frames, before said step of loading; and wherein said step of loading includes: loading the transmission frames onto an optical fiber for transmission.

Claim 4 (canceled).

5. (currently amended) A method for data transmission over an optical network, the method comprising:

collecting, in at least one service collection unit, services data in their original protocols from a plurality of different types of services to be transmitted, each said at least one service collection unit including an optical transceiver;

said plurality of different types of services comprising at least TDM, ATM, Fibre Channel, Ethernet, PDH and Frame-Relay;

processing ~~the~~ services data of at least two services from said plurality in their original protocols into ~~packets a~~
packet;

converting the packets into optical signals on an optical fiber for transmission into a metro network; and

sorting the services data from a plurality of said converted packets in at least one aggregator module, said at least one aggregator module having an aggregator optical

transceiver, coupled for optical communication to the at least one service collection unit, wherein the step of processing includes:

segmenting an incoming bit stream of services data in its original protocol;

adding a tag to a header of each segment, each tag including connection identification between a source and a destination end-point of the bit stream;

encapsulating said tagged segment into a Packet-over-SONET (PoS) frame; and

transmitting said PoS frame over the optical transceiver of one of said at least one service collection unit.

Claims 6-7 (canceled).

8. (previously presented) The method according to claim 5, further comprising the step of switching said PoS frame between the optical transceivers of a plurality of service collection units by means of a stream switch.

9. (previously presented) The method according to claim 5, wherein the encapsulated segment is scrambled, before said step of transmitting.

10. (previously presented) The method according to claim 5, wherein the step of transmitting includes WDM multiplexing of optical signals from optical transceivers of more than one said at least one service collection unit with different specific wavelengths to be transmitted.

11. (previously presented) The method according to claim 5, wherein the step of segmenting includes segmenting said incoming bit stream into variable-length segments.

12. (currently amended) The method according to claim 5, further comprising the step of switching the tagged segment to ~~an appropriate~~ a Trunk by a packet switch before said step of encapsulating.

Claim 13 (canceled).

14. (previously presented) The method according to claim 1, wherein the step of sorting includes: switching services data of a single type of service to an aggregation sub-module for said single type of service.

15. (previously presented) The method according to claim 5, wherein the step of sorting includes: receiving incoming optical signals from said at least one service collection unit in an optical transceiver of one of said at least one aggregator module; and switching said incoming optical signals by means of a stream switch to a transmission framer for decapsulating said tagged segments from said PoS frames.

16. (previously presented) The method according to claim 15, wherein the step of sorting further includes: reading tags on said decapsulated tagged segments; and switching said decapsulated tagged segments to one of said at least one aggregator module, according to said segment's tag.

17. (currently amended) The method according to claim 16, further comprising the steps of: removing the tag from each segment to provide a plurality of segments of said data of different types of services; reassembling data of each type to its original bit stream; and aggregating data of each of said different services together for transmission over ~~an~~ appropriate a network associated with the service.

18. (previously presented) The method according to claim 17, wherein the step of aggregating includes multiplexing data from a plurality of different services onto a single fiber over different wavelengths.

19. (currently amended) The method according to claim 17, wherein the step of aggregating includes aggregating services data of a single service type directly onto an optical fiber in ~~an appropriate a~~ network associated with the service.

20. (previously presented) The method according to claim 10, wherein the step of sorting includes: de-multiplexing incoming optical signals; and sending said de-multiplexed signals to the optical transceiver of one said at least one aggregator module.

21. (currently amended) The method according to claim 1, further comprising the steps of: receiving aggregated services data from at least two networks in an aggregator, each services data in its own protocol and at its own bit rate; sorting the received services data, according to network destination; processing the services data in their original protocols into packets; adding a connection identification tag to each packet; switching each packet to ~~an appropriate~~ a trunk optical fiber for transmission to one said at least one service collection unit.

22. (previously presented) The method according to claim 21, including encapsulating said tagged packets into a Packet-over -SONET (PoS) transmission frame before the step of switching.

23. (previously presented) The method according to claim 21, wherein said step of sorting the received services data includes sorting by de-multiplexing.

24. (previously presented) The method according to claim 21, wherein said step of sorting the received services data includes separating aggregated services data.

25. (currently amended) The method according to claim 22, further including the steps of: receiving incoming packets from a plurality of trunk ports in the optical transceiver of one said at least one service collection unit; decapsulating each encapsulated PoS packet; switching each packet to a local network according to said tag on the packet; stripping off said tag; reassembling all segments of each service to their

original bit stream; and transmitting each service to a final destination over a local network ~~appropriate for~~ associated with that service.

Claim 26 (canceled).

27. (previously presented) The method according to claim 25, wherein said step of receiving includes: receiving transmission frames from said plurality of trunk ports in said one said at least one service collection unit; switching said transmission frames from said optical transceiver of said at least one service collection unit to at least one transmission framer; and de-packing said transmission frames.

Claim 28 (canceled).

29. (previously presented) The method according to claim 25, wherein said step of transmitting includes: passing said services data to a service interface in a service card; and sending said services data through a selected destination service port in said one said at least one service collection unit, for transmittal to a final destination.

30. (previously presented) The method according to claim 1, wherein said step of sorting includes sorting the services data according to service type, and aggregating the sorted services data from each different service for transmission over a compatible transport network.

31. (previously presented) The method according to claim 1, wherein said step of sorting includes sorting the services data from a plurality of packets according to end destination, and aggregating said sorted data according to end destination for transmission over a compatible transport network.

Claim 32 (canceled).